STAT100 Problem Set 7
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1a.
```
> mean(BodyFatPercentage$Pct_Fat)
[1] 26.96196
> length(BodyFatPercentage$Pct_Fat)
[1] 92
> sd(BodyFatPercentage$Pct_Fat)
[1] 7.142888
> #Erik Ter-Gabrielyan
```

1b.
95% CI
Mean +- 1.945(s/sqrt(n))
26.962 +- 1.945(7.143 / sqrt(92))
26.962 +- 1.945(0.745)
26.962 +- 1.448
25.514, 28.41

1c.
26.962

1d.
1.448

1e.
We are 95% confident that the population mean body fat percentage in adolescent girls falls between 25.514 and 28.41.

1f.
99% CI
Mean +- 2.626(s/sqrt(n))
26.962 +- 2.626(7.143/9.592)
26.962 +- 1.956
25.006, 28.918

1g.
26.962

1h.
1.956

2a.

```
> table1 <- table(BodyFatPercentage$Activity)
> table1

  high    low medium 
    10      6     76 
> percent = 100*table1/sum(table1)
> percent

     high       low    medium 
10.869565  6.521739 82.608696 
> # Erik Ter-Gabrielyan
```

2b.
90% CI
Proportion +- 1.645((Proportion(1-Proportion))/n)
0.826 +- 1.645(sqrt((0.826(0.174))/92))
0.826 +- 1.645(sqrt(0.002))
0.826 +- 0.065
0.761, 0.891

2c.
0.826

2d.
0.065

2e.
We are 90% confident that the proportion of adolescent girls with a medium activity level falls between 0.761 and 0.891

3a.
We find the sample mean by adding both the upper and lower limit and dividing by 2.

Sample mean = (6.85 + 7.49)/2
= 7.17

3b.
Given the margin of error and lower endpoint, to find the upper endpoint we simply add the margin of error to the lower endpoint twice.

Upper endpoint = 6.96 + 0.21 + 0.21
= 7.38

3c.

Sample size = 1/(m^2)
= 1/(0.0225^2)
= 1/0.0005)
= 2000